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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
HAVAN, THU THAO

ART UNIT	PAPER NUMBER
2672	25

DATE MAILED: 06/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO 90C (Rev 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 April 2004*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *31-38* is/are allowed.

6)☒ Claim(s) *1,3-9,21,22 and 24-26* is/are rejected.

7)☒ Claim(s) *2,10-20,23 and 27-30* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

Claims 1-38 are pending in the present application.

Response to Arguments

Applicant's arguments filed July 30, 2001 have been fully considered but they are

not persuasive. As addressed below, Sayre and Browne teach the claimed limitations.

Sayre teaches a function of at least one variable and performing the non-affine

transform on the function including the variable (col. 2, lines 7-27; col. 6, line 3 to col.

10, line 40). In other words, Sayre determines whether the transformation should occur

X first, Y first and in transposed or untransposed form as follows. First the absolute

values of A, B, D and E are determined. If either of A or B is greater than both of D or

E, perform the X pass first, otherwise, perform the Y pass first. If the X pass is first, and

A is less than B, then also perform a transposition. If Y pass is first, and E is less than

D, then also perform a transposition. Information is stored in four images. Each image

is composed of 1's and 0's. For any given pixel, if that pixel is to be transformed X pass

first, then the corresponding position in the X pass first (XPF) image is a 1, and the Y

pass first, (YPF) image, is a 0. Also, the corresponding positions in the X transpose

(XTF) image and Y transpose (YTF) image are also 0. Similarly, if a pixel in the source

image is to be transformed in the transposed form with the Y pass first, then the

corresponding positions in the X pass first, Y pass first and X transpose first will all be 0.

Only the corresponding pixel in the Y transpose first image will be 1. Thus, the

mathematic formula as a function that includes variable such as a, b, c, d, x, and y in determining the non-affine transform. Furthermore, a variable is a quantity capable of assuming any of a set of values or a symbol representing such a quantity. For example, in the expression a2 + b2 = c2, a, b, and c are variables.

Claim Objections

Claim **2, 10-20, 23, and 27-30** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: Examiner searching for the step of converting the transformed path from a function that describes an entire curve to a function of the form (please see formula on page 34, line 19) that describes a segment of the curve by setting each (please see formula on page 34, line 20) where c is a fixed fraction and the step of a bilinear transform, in combination with the other elements of the claim, was not disclosed by, would not have been obvious over, nor would have been fairly suggested by the prior art of record.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims **1, 3-9, 21-22, and 24-26** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Sayre (US patent no. 5,175,808) in view of Browne (US patent no.

6,542,157).

Re claims **1 and 21**, Sayre had:

A.) Performing a non-affine transform on the path instead of the multiple pixels

represented by the path to produce a transformed path (col. 11, line 48 to col. 12, line

2); in other words, Sayre teaches performing a non-affine image transformation on a

source image comprising a plurality of points (i.e. pixels) having at least X and Y values.

The X and Y values made up a path consisting of values for calculations;

B.) Rendering the transformed path onto the computer screen (col. 1, lines 10-

24); in other words, Sayre teaches the system is disclosed in a computer graphics

applications. Thus, he is rendering the transformed path onto the computer screen.

C.) A function of at least one variable and performing the non-affine transform on

the function including the variable (col. 2, lines 7-27; col. 6, line 3 to col. 10, line 40). In

other words, Sayre teaches the mathematic formula as a function that includes variable

such as a, b, c, d, x, and y in determining the non-affine transform. Furthermore, a

variable is a quantity capable of assuming any of a set of values or a symbol

representing such a quantity. For example, in the expression a2 + b2 = c2, a, b, and c

are variables.

Sayre *fails* to specifically disclose describing at least a portion of a base image

as a path, the path representing multiple pixels as claimed. However, Browne (col. 10,

line 42 to col. 11, line 36; figs. 3a-3c, 14a-14b, and 15-18) indicates that it's well known

to have at least a portion of a base image as a path with the path representing multiple

pixels. In that he discloses for quadrilateral mesh elements, the unit square tile curves

are mapped using a standard non-affine bilinear warp. The source coordinates are the

vertices of the tile's unit square, and the destination coordinates are the mesh element

vertices. The associated orientation value is used to align source and destination

coordinates correctly. Therefore, taking the combined teaching of Sayre and Browne as

a whole, it would have been obvious to modify Sayre to describe at least a portion of a

base image as a path, the path representing multiple pixels as claimed. Doing so would

enable pixels within the base image are described using a set of equations known as a

path (Browne: col. 10, line 42 to col. 11, line 36; figs. 3a-3c, 4, 14a-14b, and 15-18).

Re claims **3-4, 8, and 24**, Sayre discloses the portion of the base image as a

path comprises describing the portion using a function of order n and 2n (col. 1, lines

46-62). In other words, Sayre teaches the nth order which comprises of any number as

in n or 2n. Warping functions can be wholly arbitrary functions.

Re claims **5-7 and 25**, Sayre discloses the portion as a function of order one and

three; and a non-affine transform comprises performing a perspective transform (col. 1,

lines 46-62). In other words, Sayre teaches the nth order which comprises of any

number as in n or 3. Warping functions can be wholly arbitrary functions. As for non-

affine transform, Sayre teaches non-affine image transformation.

Re claims **9 and 26**, Sayre discloses the step of approximating the transformed

path as a series of lines and rendering each line in the series of lines (col. 12, lines 45-

66; figs. 2 and 5a-5d). In other words, Sayre teaches the X and Y tables define the lines.

Re claim **22**, Sayre discloses a smooth curve (col. 6, line 34 to col. 7, line 36). In other words, Sayre teaches a spline surface which corresponds to a smooth curve in computer graphics.

Allowable Subject Matter

Claims **31-38** are allowed.

The following is an examiner's statement of reasons for allowance: The present invention relates in general to the transforming and rendering of graphical curves. The closest prior art, Sayre (US 5,175,808) teaches a similar system, which also deals with non-affine image warping. However, Sayre fails to teach the step of converting a function of the form (please see formula on page 43, line 4) that describes a segment of the curves into a function of the form (please see formula on page 43, line 6) that describes a different sized segment of the curve by setting each (please see formula on page 43, line 9) where c is a fixed value that determines the segment size. Additionally, the prior art of record fails to teach or suggest the step of converting a function of the form (please see formula on page 43, line 22) that describes a segment of the curve into a function of the form (please see formula on page 44, line 1) that describes an adjacent segment of the curve by setting each (please see formula on page 44, line 4).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Inquiries

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thu-Thao Havan whose telephone number is (703) 308-7062. The examiner can normally be reached on Monday to Thursday from 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on (703) 305-4713.

Any response to this action should be mailed to:

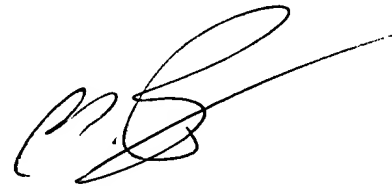Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal

Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the Technology Center 2600 Customer Service Office

whose telephone number is (703) 306-0377.

Thu-Thao Havan
June 27, 2004

MICHAEL RAZAVI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600